OBJECT ORIENTED PROGRAMMING WITH JAVA 8– LAB 2

1. Write a program to find if a given year is leap year or not.

Ans=

Code-

```
import java.util.Scanner;
class Leapyear
{
        public static void main(String[] args)
        {
         Scanner year = new Scanner(System.in);
         System.out.println("Enter a year: ");
         int y = year.nextInt();

         if (y % 4==0 && (y % 100!=0 || y % 400==0))
                {
                  System.out.println(y + " is a leap year.");
                }
         else
                {
                  System.out.println(y + " is not a leap year.");
                }
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Leapyear.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Leapyear 1496
Enter a year:
1496
1496 is a leap year.

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Leapyear
Enter a year:
1921
1921 is not a leap year.

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```

2. Write a program to check whether a given number is prime or not.

Ans=

Code-

```
import java.util.Scanner;
class Primeno
{
        public static void main(String[] args)
        {
         Scanner n1=new Scanner(System.in);
         System.out.println(" Enter a Number:");
         int N = n1.nextInt();


         if (N <= 1)
                {
                 System.out.println(N + " is not a prime number.");
                 return;
                }
         boolean prime = true;

         for (int i=2; i <= N; i++)
                        {
                         if (N % i == 0)
                          prime = false;
                          break;
                        }
        if (prime)
                {
                 System.out.println(N + " is a prime number.");
                }
        else
                {
                 System.out.println(N + " is not a prime number.");
                }
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Primeno.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Primeno
 Enter a Number:
7
7 is a prime number.

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Primeno
 Enter a Number:
8
8 is not a prime number.

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

3. Write a program to find the factorial of a number.

Ans=

Code-

```
import java.util.Scanner;
class Factorial
{
        public static void main(String[] args)
        {
         Scanner FactorialN = new Scanner(System.in);
         System.out.print("Enter a Number: ");
         int F = FactorialN.nextInt();
         int N = 1;

        for (int i = 1; i <= F; i++)
        {
         N *= i;
        }
        System.out.println("Factorial of " + F + " is: " + N);
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Factorial.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Factorial
Enter a Number: 7
Factorial of 7 is: 5040

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

4. Write a program to calculate the grade of a student based on the marks entered by user in each subject. No: of subjects is entered by the user. Program prints the grade based on the following logic.

If the average of marks is >= 80 then prints Grade ‘A’

If the average is <80 and >=60 then prints Grade ‘B’

If the average is <60 and >=40 then prints Grade ‘C’

else prints Grade ‘D’

Ans=

Code-

```
import java.util.Scanner;
class Grade
{
        public static void main(String[] args)
        {
         Scanner marks = new Scanner(System.in);
         System.out.println("Enter the number of subjects: ");
         int ns=marks.nextInt();
         int t=0;
         System.out.println("Enter the marks of subjects: ");

        for (int i=1;i<=ns; i++)
        {
         System.out.println("Enter the marks for subject " + i + ":");
        int m= marks.nextInt();
         t += m;
        }
        int a = (t + ns /2) / ns;
         System.out.println("Average marks: " + a);
        char g;
        if (a >= 80)
        { g = 'A';
        }
        else if ( a >=60)
        { g = 'B';
        }
        else if ( a >=40)
        { g = 'C';
        }
        else
        { g = 'D';
        }
        System.out.println("Grade: " + g);
        }
}


//ns=number of subject, t= total, m=marks, a=average, g=grade.
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Grade.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Grade
Enter the number of subjects:
4
Enter the marks of subjects:
Enter the marks for subject 1:
12
Enter the marks for subject 2:
85
Enter the marks for subject 3:
95
Enter the marks for subject 4:
65
Average marks: 64
Grade: B

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

5. Write a program to convert a binary number to a decimal number.

Ans=

Code-

```
import java.util.Scanner;
class Binary
{
        public static void main(String[] args)
        {
         Scanner Number = new Scanner(System.in);
         System.out.print("Enter a binary number: ");
         String binary = Number.nextLine();
         int d= 0;
         int l=binary.length();

         for ( int i = 0; i < l; i++)
         {
          int n= binary.charAt(i) - '0';
          d += n * Math.pow(2, l -1 -i);
         }
         System.out.println("Decimal equivalent: " + d);
        }
}
// d=decimal,l=length,n=number,i=integer.
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Binary.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Binary
Enter a binary number: 1010
Decimal equivalent: 10

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Binary
Enter a binary number: 101010
Decimal equivalent: 42

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```

6. Write a program to demonstrate switch case for displaying the corresponding day for each number. (eg: case 0, display the day as Sunday)

Ans=

Code-

```
import java.util.Scanner;
class Weekdays
{
        public static void main(String[] args)
        {
         Scanner w = new Scanner(System.in);
         System.out.print("Enter a Number between 0 to 6 :");
         int n=w.nextInt();

        String day;
        switch (n)
        {
         case 0:
                day="Sunday";
                break;
         case 1:
                day="Monday";
                break;
         case 2:
                day="Tuesday";
                break;
         case 3:
                day="Wednesday";
                break;
         case 4:
                day="Thursday";
                break;
         case 5:
                day="Friday";
                break;
         case 6:
                day="Saturday";
                break;
         default:
                day= "Invalid day Number.";
        }
        System.out.println(" Day Number of " + n + " is " + day);
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Weekdays.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Weekdays
Enter a Number between 0 to 6 :5
 Day Number of 5 is Friday

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

7. Write a program to print the multiplication table of a given number.

Ans=

Code-

```
import java.util.Scanner;
class Table
{
        public static void main(String[] args)
        {
         Scanner p = new Scanner(System.in);
         System.out.print("Enter a number: ");
         int n = p.nextInt();
         System.out.println("Table for " + n + ":");

         for (int i = 1; i <= 10; i++)
        {
         int r = n * i;
         System.out.println(n + " * " + i + " = " + r);
        }
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Table.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Table
Enter a number: 7
Table for 7:
7 * 1 = 7
7 * 2 = 14
7 * 3 = 21
7 * 4 = 28
7 * 5 = 35
7 * 6 = 42
7 * 7 = 49
7 * 8 = 56
7 * 9 = 63
7 * 10 = 70
```

8. Write a program to generate the first n Fibonacci numbers.

Ans=

Code-

```
import java.util.Scanner;
class Fibonacci
{
        public static void main(String[] args)
        {
         Scanner F = new Scanner(System.in);
         System.out.print("Enter a number: ");
         int n = F.nextInt();

         int f = 0, s = 1;
         System.out.print("First" + n + " Fibonacci numbers: " + f + " " + s);
         for (int i = 2; i < n; i++)
         {
            int next = f + s;
            System.out.print(" " + next);
            f = s;
            s = next;
         }
        }
}
// F=fibonacci,n=Number,f=first number, s=second number.
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Fibonacci.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Fibonacci
Enter a number: 5
First5 Fibonacci numbers: 0 1 1 2 3
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

9. Write a program to print the following Right Triangle Star Pattern where number of rows is given as input.

```
*

* *

* * *

* * * *

* * * * *
```

Ans=

Code-

```
import java.util.Scanner;
class Pattern
{
        public static void main(String[] args)
        {
         Scanner P = new Scanner(System.in);
         System.out.print("Enter a number: ");
         int n = P.nextInt();

         for (int i = 1; i <= n; i++)
        {
         for (int j = 1; j <= i; j++)
        {
         System.out.print("* ");
        }
         System.out.println();
        }
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Pattern.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Pattern
Enter a number: 5
*
* *
* * *
* * * *
* * * * *

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```

10. A cloth shop offers a discount of 10% for purchases made up to Rs.1000, 12% for purchases between 1000 and 1500 and 15% for purchases more than 1500. Write a program to implement the above scheme for a given sales amount and print out the sales value, discount and net amount payable by the customer.

Ans=

Code-

```
import java.util.Scanner;
class Sales
{
        public static void main(String[] args)
        {
         Scanner S= new Scanner(System.in);
         System.out.print("Enter a Amount: ");
         double sales = S.nextDouble();
         double discount;

         if (sales <= 1000)
        {
         discount = sales * 0.10;
        }
         else if (sales <= 1500)
        {
         discount = sales * 0.12;
        }
        else
        {
         discount = sales * 0.15;
        }
        double netspend = sales - discount;

        System.out.println("Sales amount: Rs." + sales);
        System.out.println("Discount: Rs." + discount);
        System.out.println("Net amount payable: Rs." + netspend);
        }
}
```

Execution-

```
C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>javac Sales.java

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Sales
Enter a Amount: 2700
Sales amount: Rs.2700.0
Discount: Rs.405.0
Net amount payable: Rs.2295.0

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Sales
Enter a Amount: 980
Sales amount: Rs.980.0
Discount: Rs.98.0
Net amount payable: Rs.882.0

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>java Sales
Enter a Amount: 1200
Sales amount: Rs.1200.0
Discount: Rs.144.0
Net amount payable: Rs.1056.0

C:\Users\p7pha\OneDrive\Desktop\Cdac DBDA\JAVA\Day 2 & Lab2\Answers>
```